MassCEC ASHP Program: Lessons from Year 1

NEEP Air Source Heat Pump Workshop
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Motivation for Clean Heating

MA Background
- 50% heat with oil, electric, or propane
- Heating comprises 30% of GHG emissions
- GHG reduction goals: 25% by 2020, 80% by 2050

Clean Heating Strategy
- MassCEC supports clean heating: ASHPs, GSHPs, central biomass, solar thermal
- ASHPs can reduce household heating emissions by ~50% now
  - As electricity continues to become cleaner, so do heat pumps
  - “The electric car of heating and cooling”
MassCEC ASHP Experiences: One Year In

- Partnered with NEEP in 2014
  - MassCEC has 9 participating manufacturers, 50+ models
- ASHPs have dominated clean heating program volume
  - Anticipating 4,000 this fiscal year
- Strong demand and potential for clean heating and cooling

MassCEC ASHP Program Stats

- Projects: 1900
- Total rebates: $2.7 Million
- Avg. rebate: $1400
- Avg. # of units: 1.7
- Single unit installs: 40%
- Multi-head installs: 14%

August 2015: MassCEC makes 5-year, $30 Million commitment to support clean heating and cooling in MA.
  - Goal is to support rapid growth of industry into self-sustaining, mature market
Components of a mature market

1. **Technologies**: higher efficiencies, improved cold-climate capacity, more indoor configurations, increased reliability
   - Maintaining aggressive product improvement trajectory

2. **Installations**: improved quality, reliability, performance, and cost reductions
   - Growing positive customer experiences, remaining competitive given fuel price volatility

3. **Increased Share of Heating**: potentially having ASHPs offset more of a home’s heat load, possibly all of it
   - Cold temperature efficiency plus capacity and low-temp operation

Ultimately, state GHG emissions goals can only be met if **tens of thousands** of households implement renewable heating annually
   - Must access rentals, low-income, and commercial buildings
Take-Aways and Challenges from MA Market

Design

- ASHPs largely remain supplemental heating
  - Homeowners still must maintain back-up system
  - Provides cost-effective but more limited GHG reductions
  - Adds cost in long-run, challenges perception of technology

- Cold-temp capacity requirements have been controversial
  - MassCEC requires heating capacity, not just efficiency, to be delivered
  - 100% of rated capacity at 5°F in addition to NEEP spec

- Rapid maturation of technologies
  - NEEP list has proliferated to many manufacturers
  - Much wider range of capacities, configurations, and brands available
  - Efficiencies continue to improve
Take-Aways and Challenges from MA Market

Market

- Lower oil, natural gas prices alongside spikes in electricity prices are not favorable for ASHPs
  - Customer interest remains, but economic message changing
  - Additional reasons for adoption beyond economics
- Clean heating technologies are great solution for natural gas moratoria (Cape Cod and western MA)
  - Roughly half of state has no natural gas regardless
- MassCEC has not conducted significant outreach or marketing
  - Market demand appears strong
- Strong network between manufacturers, distributors, and installers
  - Messages move quickly
Take-Aways and Challenges from MA Market

Growth Constraints and Opportunities

- Increased manufacturer, product diversity would help market
- With strong market growth, demand for skilled installer workforce has often outstripped supply
- Tens of thousands of installs can impact electrical grid
  ➢ However, offsetting electric resistance heat brings benefits
- Solar PV is a complementary technology with high uptake in MA
- Quality control and program standards still required
Take-Aways and Challenges from MA Market

Administrative Challenges and Scaling

- Need to continue working with NEEP, manufacturers to set efficiency targets and structure gradual tightening
- Strive for consistent, clear program requirements across MA programs
- Maintain stable program while implementing changes gradually
Thank you!

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Higher-Cost Heating Fuels in Massachusetts

Percent High-Cost Home Heating Fuels:
- 0 - 20%
- 20 - 40%
- 40 - 60%
- 60 - 80%
- 80 - 100%

Source: US Census Bureau, American Community Survey